



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,816	12/12/2003	Steven A. Soper	Soper 0023.1	3513
25547 7590 01/02/2008 PATENT DEPARTMENT TAYLOR, PORTER, BROOKS & PHILLIPS, L.L.P P.O. BOX 2471 BATON ROUGE, LA 70821-2471			EXAMINER LEE, SIN J	
			ART UNIT	PAPER NUMBER
			1795	
			MAIL DATE	DELIVERY MODE
			01/02/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/734,816

Applicant(s)

SOPER ET AL.

Examiner

Sin J. Lee

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-11,14 and 16 is/are rejected.
- 7) ☒ Claim(s) 3,12,13 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12/12/2003.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Claims 17-48 are canceled.
2. Since the provisional application does not provide support for the present limitations (iii) and (iv) (with regard to the fluence), effective filing date for present application is December 12, 2003 (not March 27, 2003).

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4-11, 14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Vaidya et al ("Photoresist-free Micropatterning of Polymer Surfaces Used in Microanalytical Devices", presentation, Micro Total Analysis Systems (November 2002), pg.1-3).

In Vaidya (see page 1), PMMA or PC surfaces are exposed to UV radiation through a photomask *in the presence of oxygen* (i.e., in an oxidizing atmosphere). This process chemically modifies the surfaces making them more hydrophilic (i.e., -COOH groups are first bound to the polymer) as shown in Figure 1. Then the carboxylic groups further react with H<sub>2</sub>N-CH<sub>2</sub>CH<sub>2</sub>-NH<sub>2</sub> (present one or more reactants) to convert the carboxylic groups to amine groups (present imparted chemical functionality having nitrogen with a lone pair of electrons). Then a *gold* seed layer (present one or more reactants of claims 6 and 7) is deposited on the aminated surface, and metal films

are formed on the gold seed layer using an electroless metal plating bath. Vaidya's method is photoresist-free method. Vaidya teaches that his method of surface modification provides a means to covalently attach micro-domains of various enzymes, antibodies, proteins on plastic surfaces and that his method is useful in fabrication of micro-circuitries a micro-electrodes in micro-fluidic devices. (see pg.3). Thus, Vaidya teaches present inventions of claims 1, 2, 4-11, 14 and 16 (since in Vaidya the carboxylic groups are attached to the polymer after the patternwise UV exposure, it is the Examiner's position that it follows that the fluence of light in the exposed portions was sufficient to induce photooxidation of polymer on the surface and sufficient to generate substantial quantities of carboxyl groups that are bound to the polymer. It also follows that the fluence of light in the unexposed portions of the surface is zero or is insufficient to induce the generation of substantial quantities of carboxyl groups that are bound to the polymer. Also, since the reference does not mention that photoablation occurs, it is also the Examiner's position that the fluence of light in the exposed portions of the surface was insufficient to cause photoablation of polymer in the exposed portions).

***Allowable Subject Matter***

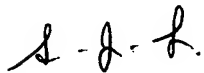
5. Claims 3, 12, 13 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Vaidya does not teach or suggest present visible light of claim 3. Vaidya does not teach or suggest present one or more reactants comprising a second polymer or present process of forming a second

polymer bound to the first polymer as claimed in claim 12. Vaidya does not teach or suggest present step of binding respiring cells to the chemical functionality on the polymer as claimed in present claim 13. Vaidya does not teach or suggest present polymer of claim 15 comprising a polysulfone.

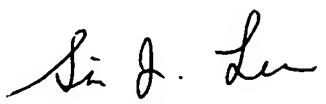
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee  
December 26, 2007



**SIN LEE**  
**PRIMARY EXAMINER**